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## SOME POINTS IN THE PATHOLOGY AND TREATMENT OF CHOLERA INFANTUM.<sup>1</sup>

BY EDWARD WALDO EMERSON, M. D., CONCORD.

If during the last year out of every twelve deaths in Boston one had been from yellow fever, Asiatic cholera, or plague, every one would be alarmed; the legislature, city government, and medical societies would bestir themselves. But that was the actual proportion of the deaths reported from cholera infantum to the whole number of deaths of persons of all ages, and but little comment was excited. Yet the mortality from either of the dreaded diseases first mentioned, should they get a foothold in Boston, probably would never approach that from this common affection. We have got so accustomed to it that it is regarded as a necessary evil. But the advance of sanitary science and physiology may make it worth while to consider carefully from time to time our every-day diseases, and see if we are not better prepared to prevent or to fight them with the new tactics and weapons drawn from these sources, instead of using the consolations of philosophy for the annual loss under the old traditional methods.

With regard to this disease there is an opinion fast gaining ground that much if not all of it is due to causes largely within our power to prevent. As I do not propose to go into this branch of the subject, which is happily beginning to excite much attention here and abroad, I will quote but one passage from the excellent little book of Dr. John Simon, the chief medical officer of the Privy Council of Great Britain, on Filth Diseases, which was republished by the State Board of Health. He says, "In all filthy districts one particular class of diseases seems specially apt to stand in relief—the diseases, namely, which in respect of their leading symptom may be generalized as diarrhoeal. . . . The mucous membrane of the intestinal canal seems peculiarly to bear the stress of all accidental putridities which enter the blood. Whether they have been breathed, or drunk, or eaten, or sucked up into the blood-vessels from the surface of foul sores, or directly injected into the blood-vessels by the physiological experimenter, *there* peculiarly the

<sup>1</sup> Read before the Massachusetts Medical Society, June 13, 1876.

effect may be looked for; just as wine, however administered, would 'get into the head,' so the septic ferment, whencesoever it may have entered the blood, is apt to find its way thence to the bowels, and there, as universal result, to produce diarrhoea."

In view of the great prevalence and fatality of this disease which the next month brings with it, under our present sanitary conditions, as surely as it does the white azalea or the water lilies, I have thought it might not be uninteresting to consider briefly in this paper its *pathology* and *treatment*, to see if these fields may afford anything new and profitable. Many of the standard books are somewhat disappointing in their chapters on cholera infantum. The pathology is not often very definitely stated. Were this done, perhaps modes of treatment more in accordance with the physiological indications thence deducible, and offering better prospect of success, would supersede the more or less blind and unsatisfactory methods often recommended.

*Pathology.* — The name cholera infantum is often loosely applied to various summer diarrhoeas, but should be confined to that violent choleraic form, gastro-intestinal catarrh of young children of which Leube says, in his article on the subject in Ziemssen's Cyclopædia, that "its symptoms so closely resemble those of Indian cholera that if one were confined to the observation of the individual case he could not say which it was." However the irritants or occasioning causes may differ, the weight of testimony of the best modern authors is so great for the entire identity of the symptoms and of the post-mortem appearances in a severe case of this disease and of cholera morbus with those in Asiatic cholera, that I may safely treat of the pathology of the choleraic state in general, drawing my instances from cases of epidemic cholera also.

This condition becomes all too familiar to the physician during the weeks when the thermometer reaches 90° Fahr., when he may see a rosy, well-nourished, active child, with perhaps no warning beyond a very short stage of indigestion, suddenly seized with violent and profuse watery discharges, and soon after with vomiting of quantities of clear or slightly tinged liquid. There is coldness, pallor, pinched appearance, and even cyanosis of the surface, beginning at the extremities, but rapidly spreading to the trunk and head, which was at first remarkably warm, and the abdomen is a little distended. Notwithstanding the great apparent cooling, the deep rectal temperature rises to normal or above, according to the best authorities. The pulse is rapid, and becomes momentarily more difficult to feel. The thirst is great, the drink vomited. At the end of two days, or in extreme cases even of twelve hours, the child may be hardly recognizable as it lies faintly fretful or drowsy, the fontanelles sunken, the lids half shut over rolled-up eyes, pulseless, pale, and cyanotic, with sharp features and cold, clammy, and

apparently wasted limbs, the abdomen relaxed, the skin wrinkled and inelastic, the urine suppressed, the upward and downward discharges less frequent or stopped, the respiration shallow, the breath cold, and perhaps alarming little premonitory twitchings of the limbs. In old times, when they used to bleed, it was found that only a drop or two of thick, dark-red blood would flow.

When matters have reached this state, the child will almost surely die, either by increasing sopor or by convulsions. Or, under favorable circumstances, before extreme algidity and coma are reached, reaction may set in. In fact, one striking point about the state is that it seems to be self-limited if the patient can survive until the turning-point comes, which is usually not more than two and a half days at farthest from the onset. Then the patient usually begins to recover with great rapidity, unless a relapse occur or entero-colitis or other complication arises. The vomiting ceases, the pulse returns, the stools are less frequent and contain more fecal matter, the pinched and wasted appearance of face, body, and limbs disappears, with the return of warmth, color, and natural perspiration. Urine reappears, the rectal temperature falls to normal, or a little below, as the surface temperature rises. After death in the extreme algid state the surface temperature may slowly rise to normal or above, the body cools off very slowly, and rigor mortis comes on late and persists long.

The post-mortem appearances show no structural changes except a swollen condition of the solitary follicles and Peyer's patches. Sometimes thickening of the blood and occasional slight ecchymoses under the serous membranes are found. The intestinal walls are injected. The large abdominal veins, the right side of the heart, and the pulmonary arteries are found distended with dark blood. The kidneys are congested, and sometimes the tubules are full of epithelium. The left side of the heart and the arteries are very empty, the membranes of the brain a little injected, the brain itself bloodless and sometimes oedematous. The lungs seem empty and dry, and collapse greatly. The intestine is full of clear or slightly turbid fluid like the discharges, consisting mainly of water and chlorides, with a little albuminous flocculent matter, showing under the microscope swollen epithelium and granular matter.

What, then, is the pathological condition that occurs? The collective symptoms of paleness, coldness, cyanosis of all the surface, and probably too of the lungs, together with the internal objective and subjective heat and the immense activity of movement and transudation in the bowel, the suddenness of the collapse and apparent emaciation, and the equal suddenness of the recovery and the reappearance of heat and *turgor vitalis* would alone demonstrate, as plainly as any clinical phenomena could, that the main pathological condition was an entire change of the equilibrium of the circulation, namely, engorgement of the ab-

dominal at the expense of the peripheral and respiratory organs. The post-mortem appearances put the matter beyond all doubt. In fact, it is a condition in many respects analogous to two other circulatory disturbances, syncope and shock, the pathology of which states are set forth at length in an interesting article in the *Practitioner* for October, 1873, by T. Lauder Brunton. Just how this disturbance of circulation is wrought is not certain, but a physiological explanation may be hazarded. To do this more clearly I will venture very briefly to state the received theories as to the innervation of the intestines.

A. Local ganglia have been demonstrated in the intestinal walls.

B. The vagi and the splanchnic nerves jointly preside over the stomach and intestines.

C. The vagi (sensory in their function) are the accelerating nerves of the intestinal tract. Their irritation produces increased movement of the intestines and also heightened secretion, and after their section, as demonstrated by Brodie and lately more completely by H. F. Wood, of Philadelphia, even the most irritant cathartics fail to act.

D. The splanchnic nerves are the restraining nerves of the stomach and intestines. They are so, probably, through their being also the vaso-motor nerves of the intestinal tract. Their section, as the experiments of Moreau proved, causes increased secretion and movement; in other words, corresponds nearly in effects to the irritation of the vagi.

Would not the following theory, then, meet the exigencies of the case, namely:—

That the cholera poison or irritant acts with special force on the places where it is most concentrated, namely, the gastric and intestinal mucous membrane; that there its first action would probably be on the local ganglia, producing, we may suppose (since the existence of vasodilators is not yet proved) a local vascular spasm, which soon exhausts itself, and is succeeded by relaxation of the walls of the vessels, through temporary paralysis of the splanchnic nerve, resulting in strong congestion. This would cause greatly increased transudation into the alimentary canal and heightened peristaltic action. Moreover, the vagus, which, as above said, represents the sensory nerve of the stomach and bowels, would undoubtedly be irritated, hence causing increased movement of the bowels. The possibility of the phenomena of irritation of the vagi and splanchnic paralysis occurring at once from the same cause can be imagined when one considers how much sooner the contractility of small muscles of the vessels innervated by the splanchnic would probably be exhausted than that of the larger constrictor muscles of the bowels. The poison, if absorbed to some degree into the circulation, could cause directly (or, if not absorbed, by reflex action) spasm of vessels remote from the seat of its extreme and paralyzing action, namely, the peripheral and pulmonary vessels. The blood, then, almost stagnating in the



large central vessels and driven from the systemic arteries and left heart by their continued contraction, would accumulate in the right heart and pulmonary arteries. Hence the carbonic acid would increase and the oxygen diminish in the blood, and both of these circumstances have been found by experiment to increase peristaltic action. Finally, from prolonged irritation the vagus becomes paralyzed, and the stomach and bowels cease to act, and the left heart, not having blood enough to contract upon, and suffering also in its nutrition from the condition of the coronary arteries, becomes paralyzed, or else the brain becomes œdematous, and convulsions occur. In cases that recover we may suppose that much of the poison having been eliminated, or having worn out its effects or lost its activity, relaxation succeeds the spasm in the exhausted muscular walls of the peripheral and pulmonary vessels, while those of the abdomen, after long dilatation, relieved of their load by the equalization of the circulation, gradually recover their tone. So much for hypothesis as to the method of production of this pathological disturbance of equilibrium occasioning the alarming symptoms; of the fact we may feel reasonably sure.

*Treatment.* — The most ardent advocate of expectancy would admit that were it possible to remove the condition upon which all these phenomena depend, instead of trying to repress them individually, the former course would be as much more wise and desirable than the latter as the mending a leak in a roof would be than the constant renewal of the rain-spoiled wall-paper, plaster, and carpets.

I think it is not too much to say that we know enough of the main pathological condition to justify us in attempting to treat it directly, and that the newer treatments that have aimed at this object seem to have had success enough to justify a continuance of them. Certainly no patient looks a more unpromising subject for treatment than a child in advanced collapse from cholera infantum, and yet the change from all but death to life that may occur in a few hours, should reaction be brought about, is a fact as encouraging as it is surprising.

Steiner, in his excellent little hand-book of children's diseases, says of this disease, "Let the physician treat early and actively; inactive expectancy is nowhere more punished than here."

*Prevailing Treatments.* — Before speaking of the modes of treatment that seem most indicated by the known and suspected pathological conditions and to have stood the test of experience, I will briefly allude to those more in vogue, purposely omitting prophylactic treatment as a branch which opens too wide a field for the limits of this paper. In what follows, for reasons before mentioned, I shall speak of the choleraic condition, whether from sporadic or epidemic causes, as essentially the same state, and remedies effective in the worse form would probably, *a fortiori*, promise even more in the milder form.

Too many of the treatments proposed are symptomatic in the narrowest sense of the word. This is not true, however, with regard to the old *eliminative* treatment, which was at one time popular on theoretical grounds in the evacuant stage. Dewees is dissentingly quoted by Churchill as recommending "warm water to encourage the puking and enemata of warm water to clear the bowels," and even at present Goldbaum, a German writer, goes so far as to maintain that transudation is a favorable occurrence, and not to be interfered with. It is difficult to see, with the now commonly accepted theories of the emeto-catharsis being due to an irritant, organic or inorganic, working specially on the intestinal tract, why this is not a conservative process by which the body endeavors to rid itself of the offending presence. It is not improbable that it is so to a certain extent, but clinical experience shows that this process may continue until it becomes the main source of danger.

Energetic diaphoresis is frequently recommended at the very beginning of the attack.

Either at the outset or after one artificially produced catharsis, almost all writers recommend opiates to check the discharges, some combining them with astringents, and some with chalk or lime-water, on a theory that an injurious acidity prevails in the alimentary canal. These are continued, even in large quantities, into the stage of collapse.

Calomel was until very lately almost universally given in the first stage, with a view that it either was, or ought to be, beneficial in some way. The medical adviser, like Holmes's Rip Van Winkle, finished his directions thus : —

"Last, with a dose of cleansing calomel  
Unload the portal system, — that sounds well !"

Niemeyer, who considers it a sheet-anchor in cholera infantum, thinks that its good effect is only to be explained by its power to arrest decomposition and hasten the removal of irritating ingesta. Leube, in Ziemssen's Cyclopædia, recommends it as an efficient cathartic. Meigs and Pepper hold that it acts in the large doses commonly given as a powerful sedative, too powerful, they urge, for a depressing disease.

Subnitrate of bismuth in large doses is much recommended to allay irritation by its mildly astringent and sedative action. Small doses of nitrate of silver are tried with similar object.

Hydrochloric and sulphuric acids, the latter combined with ether as the elixir Halleri, carbolic acid, and benzoin are all recommended on antiseptic grounds.

Chloral hydrate has been given by subcutaneous injection for its sedative effect. Of its good results more will be said later.

Now all writers recognize the importance of water, but many fear to give it in any other form than ice pills.

Spice poultices or sinapisms to the abdomen are recommended to

check vomiting, and Niemeyer urges the application of frozen compresses to the belly.

In the stage of collapse most authors advise alcoholic stimulants, usually the most rapidly diffusible ones, to be given frequently, in small doses, together with opiates, if the discharges persist.

Warm or hot baths have been recommended in this stage, sometimes with the addition of mustard. Intra-venous injection of water, or salt and water, or of milk, have been resorted to in the worst cases, and even transfusion of blood.

Finally, the bad percentage of recovery when marked collapse has been reached, either in the sporadic or in the epidemic form, under almost all treatments, has led some writers to believe that the patient has the best chance of recovery who is let alone to wait for the natural turn of the disease, should his strength hold out, and only given a little ice, with perhaps mild opiates and very thin, bland nourishment.

In the third, or reactionary stage, great care is advised in the administration of nourishment and stimulants, for fear of occasioning relapse or favoring secondary inflammations of the bowels or other organs.

No writer of any merit on cholera infantum fails to notice the main importance of dietetic treatment, but ideas on this subject differ widely. Niemeyer urges, as of primary importance, the necessity of absolute withdrawal of nourishment for a time, urging that whatever is given before the irritant has left the stomach will surely undergo abnormal decomposition and increase the mischief. Few others dwell on this point, but, if the child is being brought up by hand, recommend either barley-water or some similar mild farinaceous nourishment, or else beef-juice, chicken-water, or finally raw beef, scraped and perhaps moistened with red wine. Others recommend artificial foods made with reference to the deficient power of a child's digestive fluids to convert starch into dextrine, in which that transformation has been made outside the body.

*Treatment Recommended.*—Now if the views set forth in the earlier part of this paper fairly represent the pathological facts, what would be a rational treatment of the choleraic state?

Waiving the question of prophylaxis and its corollary, the question how to directly destroy or neutralize the organic irritant (if such exist) after its introduction into the body, the first indication is to correct the dangerous and unfair distribution of the blood in the body, to which the purging, vomiting, cramps, and coldness, seem to be directly due, and later the greater danger of coma, convulsions, or paralysis of the heart.

Second. If we fail in the first attempt, or do not succeed until late, we should supply the water and perhaps also the salts drained from the blood, as the thickening of the blood would prevent the good effects of the natural turn of the disease, should we have to wait for that, and perhaps dispose to various organic lesions.

Third. We should attend to the general hygiene, diet, etc., of the patients.

As to the first indication, the problem is how to cause dilatation of the peripheral vessels and contraction of the overloaded abdominal ones. If we had any means of getting directly at the splanchnic nerves, we could probably by galvanization of them directly cause the contraction of the mesenteric vessels. Ludwig and Thiry found that after section of the spinal cord in the neck, whereby dilatation of the mesenteric vessels was caused, galvanization of the lower segment would cause extreme contraction of them. Possibly galvanization applied over the middle dorsal region of a patient might produce the same effect. Chapman maintains that he can occasion it by ice-bags applied to the spine, which he uses to check diarrhœas and reflex vomiting.

Brückner, a German writer, claims that cold sand-bags of moderate weight, laid on the abdomen of cholera patients, mechanically check the access of blood to the abdominal vessels and favor its escape. Transudation is thus hindered, and perhaps absorption is favored; moreover, the peristaltic movements of the bowels are not so free. These sand-bags might be used carefully, with hot applications to the extremities.

We have a much better chance of success, however, if we try to unload the abdominal vessels by relaxing the peripheral ones by means of strong derivatives applied to the surface. Steiner strongly urges baths of from 99° to 104° Fahr. in the algid stage, combined with stimulants internally, and Leube, in Ziemssen's *Cyclopædia*, recommends the same. The distinction, too often neglected, between a warm bath and a hot bath is of vital importance here. No bath of less than 99° would be desirable. A writer in an English journal within a year or two, whose name I have lost, mentions his very gratifying success in treating the algid stage of Asiatic cholera by prolonged hot mustard packs. In accordance with this plan I treated three cholera infantum patients last summer, who were rapidly cooling off and assuming the characteristic pinched appearances of collapse, by suddenly wrapping them to the chin in cloths wrung out in hot water and mustard, with a blanket outside, and while thus mummied feeding them with plenty of ice-water and a little brandy. The pack was kept up half an hour or more, and during that time the change in the child's appearance was remarkable; the color and warmth returned to the surface, the tissues filled out, the features lost their pinched and old look, a natural perspiration broke out, the vomiting ceased, and the discharges grew less frequent. The mustard sheet was then withdrawn, but the child left enveloped closely in the warm, moist blanket. The pack in one instance had to be renewed at intervals, as a tendency to relapse manifested itself after some hours, but the condition of all mended in a marked manner after the first application, and all made a good recovery.

With regard to medication, if the choleraic state last any length of time, the blood must necessarily be altered by its drain of water and salts. Water, then, is the first medicine indicated, and should be constantly given in the form of ice-pills or spoonfuls of ice-water. Small enemata of slightly salt water immediately after a dejection might help to supply the lost fluid. Should vomiting and purging go far enough to cause a fear that the blood was becoming too much thickened, intravenous injections of water should be tried, and if it were thrown in at a temperature of 100° the heat might help relax the surface vessels. Milk and blood have also been used, but water seems more indicated, as in this disease the blood loses little albumen and no corpuscles.

As to the administration of drugs by the mouth, the fact of the probable very slight power of absorption at that time is usually overlooked. It is found that belladonna introduced into the stomach in large doses will not dilate the pupils. The medicines, stimulants, and food, then, can have little power in the present condition, nor yet help to bring on reaction, and if often repeated they may, when reaction sets in, be all greedily absorbed at once, and so do great harm, a fact to which Meigs and Pepper very properly call attention with regard to pouring in opium and alcohol in the algid stage. Internal administration of antiseptics has not so far seemed to fulfill the expectations of its advocates. As for calomel, it seems hardly indicated in the pure choleraic stage, unless there is the best reason to believe that some crude ingesta still present in the intestine demand a cathartic.

In the *Practitioner* of July, 1875, was a very striking article on the use of subcutaneous injections of chloral in the evacuant or algid stage of cholera, by Surgeon A. R. Hall, with accounts of cases treated by him and Mr. Higginson, another English army surgeon. The number of cases treated by these two gentlemen was large, and the onset severe and alarming, but they lost hardly a case. They injected, two-grain doses of chloral, diluted with ten times as much water, into the arms and legs of patients, some in extreme collapse, and in almost every case good and speedy recovery ensued. Few patients had more than eight to ten grains in all. Mr. Hall's theory was that the vascular condition was due to extreme vaso-motor irritation, and that the usual stimulant treatment only heightened the difficulty, as was shown by its small percentage of recoveries, sometimes only eighteen per cent. So he looked about for a sedative to relax the general spasm, and tried chloral with the brilliant results above mentioned. It is interesting to know that the government in India have taken pains to publish and circulate Mr. Hall's happy experience in the treatment of cholera collapse. His method seems to be well vouched for, and I see no reason why it should not be applicable to the choleraic state in children, if the injections were given progressively and carefully watched.

One word, in conclusion, as to babies' food, though that subject has been so well treated at recent meetings of the society that it is almost superfluous to say a word more. There is a point which I wish to allude to, namely, the great popularity among the rich and poor of *the nursing bottle with the flexible tube*. It is an invention of which Herod might have been proud. It is always in the baby wagon or the crib, in hot sun or close air. The child falls asleep with its nipple in his mouth. The mouth is usually never washed; the bottle and tube are, "with scalding water and with soda," so the mother says if you ask. Smell it, and see what you think. Take a parallel case. What prospect could a man have of immediate and satisfactory recovery from cholera morbus, or even dyspepsia, who should eat soup, freshly made perhaps, but out of a tureen which had been standing half a day with the remains of yesterday's soup in it, in a close room with a temperature of 90°; who, moreover, should never rinse out his mouth nor allow time for digestion, but should go to sleep with a piece of bread soaked in soup in his mouth, and, if colic or oppression caused him to complain on waking, should at once take more soup out of the unscalded tureen? This is not an agreeable picture, but it is a fair analogy. Is a teething baby's stomach stronger than a man's, that the doctor should tolerate the form of nursing bottle which encourages and contemplates a management of his diet exactly parallel to that in the unattractive picture I have just drawn?

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### RECTOCELE.<sup>1</sup>

REPORTED BY E. WARNER, M. D., WORCESTER.

THE following detailed report of the case is given as taken from the records, by Dr. C. A. Peabody, resident physician of the Worcester City Hospital, where the patient was treated.

A widow, aged fifty-nine, the mother of seven children, since the birth of her youngest child, thirty years ago, has been troubled with obstinate constipation and what she calls "falling of the womb." This has caused her increasing annoyance and discomfort, until at length she is no longer able to work, and life is almost a burden. Vaginal examination shows the perinæum to be whole and the uterus in nearly normal position. The posterior wall of the vagina, however, bags down to such an extent as to protrude from the vulva, especially on straining, and the finger introduced into the rectum passes forward into a pouch formed of the prolapsed part. The rectocele is about the size of a goose egg, and there is apparently a superabundance of tissue.

It being apparent that nothing short of surgical interference would give permanent relief, an operation was performed by Dr. Warner, as follows:—

<sup>1</sup> From the Report for Worcester District.

The patient being etherized and placed in the lithotomy position, a short vertical incision was made over the centre of the rectocele and going completely through the vaginal wall to the cellular tissue beneath. With probe and finger the vagina was separated from the rectum over nearly the whole extent of the prolapsed part; the detached portion of the vaginal wall was then excised with scissors. The portion removed was oval in shape, about three inches long by two and a half inches wide. There was but very little hæmorrhage. Care was taken not to remove the whole of the separated portion, but to leave a detached margin about an eighth of an inch wide. The edges of the wound were brought accurately together with twenty points of interrupted silk suture, the detached margins just spoken of being turned up so that their under surfaces were brought into apposition with each other.

The vagina was washed twice a day with tepid water, the bowels kept loose, and a catheter retained in the urethra. For one or two days there was slight fever, but this soon passed off and there were no other signs of constitutional or, indeed, of much local disturbance.

At the end of sixteen days the patient was examined and union found to be perfect, the cicatrix forming a raphé. The stitches were not disturbed, but came away of themselves.

When the patient was last heard from, several weeks after the operation, the cure remained perfect.

It will be seen that the operation here described differs somewhat from that usually performed in such cases. During the long thirty years of discomfort, the patient had submitted to much palliative treatment, and it was obvious that surgical interference alone could give satisfactory relief. Upon consultation, it was advised either to pare the edges of the labia majora and unite them by sutures, and thus close to a considerable extent the ostium vaginæ; or to perform the more usual operation of reflecting the mucous membrane of the prolapsed portion and folding the denuded surface together, and by the aid of sutures to hold the folded surface in accurate coaptation till union should take place, thus reducing the calibre of the vagina.

The first is known as the operation of episiorraphy, and was first introduced by Fricke. The second was attempted in a limited way by Baker-Brown, and is known as the operation of colporrhaphy, but it has been greatly extended and improved by Simon, Sims, Emmet, Thomas, and others.

The attempt to narrow by artificial means the vaginal canal, mainly for the treatment and cure of prolapse of the uterus, dates far back. At first, caustics of various kinds were used, including the actual cautery, and one writer even applied gonorrhœal virus to excite inflammation in the mucous membrane in order to secure the same result.

More recently the knife has been used by many operators, both



American and European. Ingenious modifications have been made to overcome practical difficulties, and yet the operation is difficult and the results often unsatisfactory.

In this case the operation of episiorrhaply could be more easily done, and with better prospect that the operation itself would be successful, but the trouble would be only partially removed. The door of exit for the prolapsed posterior wall would be shut, but the rectal pouch would be but slightly influenced. No doubt things would be much improved, and the age and condition of the patient imposed no objection to this method.

The operation of colporrhaphy is more frequently done. The dissection is often tedious and bloody, the introduction of sutures and the perfect coaptation of the parts difficult, and the result often unsatisfactory. If at the time successful, it may not be so permanently. Constant pressure from the distended rectum behind, and the possible pressure of a prolapsing uterus from above, may stretch and relax the parts and finally reproduce the trouble. To either operation there were serious objections. The real difficulty consisted in a surplus of material — redundancy of tissue. A similar difficulty in many other parts would be promptly treated by excision. Why not excise here an elliptical portion, thus removing the surplus tissue, and unite the divided walls of the vagina by sutures as the flaps are united after an ordinary amputation of the breast? What reason is there why union should not take place? The operation seemed easy of performance, and, if successful, the result would be the best possible. The rectum would be held back, and the uterus kept up, by a firm, thick, enduring pelvic floor. Nothing in the anatomical relations of the parts involved presented any obstacle. Upon careful reflection the operation seemed natural, simple, and justifiable, but was there a precedent? Had it ever been done? The fact that no reference is made to it by any of the leading authors upon the subject, whose works could be conveniently consulted, excited the suspicion that some serious objection existed to its practical application. But, by chance, the search for a precedent was not wholly fruitless. In the report of the Woman's Hospital at Washington, for the year 1874, edited by Dr. Thompson, a few cases are reported in detail, and the statement is made that seventeen cases in all, in hospital and private practice together, have been operated upon by him, and all the cases were entirely successful. This seemed decisive, and this method was at once determined upon. The result is given above. As yet I have not seen the report of any other operator making use of this method. In *The American Journal of Obstetrics and Diseases of Women and Children*, edited by Paul F. Mundé, in the April number of the current year, is a Report on the Progress of Gynecology during the Year 1875, by its editor, in which it is stated that

the operation of posterior colporrhaphy, after Simon of Heidelberg, for complete prolapse of uterus and vagina (removing a V-shaped flap of mucous membrane from the posterior wall, at a point near the cervix, and uniting by numerous sutures), has been performed three times in New York during the past year: twice by Dr. Wm. T. Lusk, at Bellevue Hospital; once by himself. In Dr. Lusk's cases the result was perfect; in his own the predominance of the cystocele renders a second operation for this deformity necessary. Here, as elsewhere, no reference is made to any other method than the one which confines itself to a dissection of *mucous membrane only*. The case here reported adds another to Thompson's list of seventeen, all of which have resulted successfully. *Primâ facie*, there seems to be no good reason why this method of operating should not succeed; in fact, the protected situation of the parts seems peculiarly favorable to union by first intention. I used the silk suture in this case for the reason that it seems to be as little irritating as any, and, if overlooked or forgotten, it either comes away of itself, as in this case, or it does no harm. It is no easy thing to remove wire sutures from a contracted vaginal canal when they are deeply imbedded in parts remote. It will be observed that the stitches were thickly set, approximating the parts perfectly; that they were entered at least a half-inch or more from the edge of the vaginal flap; that the sphincter ani was not paralyzed, nor the bowels kept confined. In one word, the operation was easy, the after-treatment simple, the result perfect.

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## RECENT PROGRESS IN PHYSIOLOGY.<sup>1</sup>

BY H. P. BOWDITCH, M. D.

### FUNCTIONS OF THE CORTEX CEREBRI.

*Investigations by Local Destruction.* — In all the experiments above alluded to, the motor functions of the cortex were studied by irritating the points in question and noticing what movements were produced. Another class of investigations consists in destroying the part of the cortex whose function is to be studied, and observing what muscles become incapable of voluntary movement. In experiments of this sort it was soon found that, whatever may be the immediate result of the mutilation, the paralysis wholly or in great part disappears if the animal survives the operation a few days or at most one or two weeks. To explain this a sort of vicarious function of the different portions of the cortex has been assumed, but various opinions have been held as to the parts which are thus capable of assuming each other's functions. Carville and Duret<sup>2</sup> consider that every part of the cortex of each

<sup>1</sup> Concluded from page 75.

<sup>2</sup> Archives de Physiologie, 1875, page 453.

cerebral lobe may act for every other part of the cortex of the *same* lobe, but deny that the functions of any portion of one lobe can be assumed by the corresponding (or by any other) part of the *opposite* lobe. This opinion derives apparent support from the fact that after the disturbances produced by a local destruction of cortical substance on one side have passed away, they may be reproduced by a further destruction on the same side, but not by a destruction of the corresponding part of the opposite side.

Soltmann,<sup>1</sup> on the other hand, is of the opinion that when a portion of the cortex is destroyed, its functions may be performed by the symmetrically situated portion on the opposite side. He supports this view by the following experiment. On a dog four or five days old the cortex of the whole præ-frontal and of part of the post-frontal lobe on the left side was removed. The animal showed no motor disturbances, and recovered completely from the operation, being distinguished only by a somewhat smaller size from the other pups of the same litter. Three months later the brain was exposed on the right side and the centre for the fore leg irritated. Movements of the leg not only of the opposite but also of the same side followed this irritation. It was found impossible by any variations of the intensity of the electric current or of the point of application to produce movements in the leg of the opposite side alone. When, however, the centre for the hind leg was irritated, movements were produced in the leg on the opposite side alone, the corresponding centre on the other side being apparently still intact.<sup>2</sup>

The fact that such diametrically opposite opinions can be held by intelligent observers shows clearly the need of renewed investigations and improved methods. Goltz has accordingly in a recent article<sup>3</sup> given the results of a series of experiments made in a way which seems calculated to avoid some of the difficulties experienced by other observers. One of the principal obstacles in the way of arriving at a correct solution of this question is the difficulty of keeping animals alive after the loss of a considerable portion of the cortex cerebri. Profuse hæmorrhage or inflammation of the brain substance often leads to a fatal result before the most important observations can be begun. To avoid these difficulties, Goltz had recourse to a method of removing the cerebral substance which is often employed for making anatomical preparations of the cerebral blood-vessels, namely, washing it away by a jet of water thrown with force sufficient to break up the delicate brain tissue without greatly injuring the firmer blood-vessels. The jets of water were applied by means of canulæ variously formed and inserted

<sup>1</sup> Jahrbuch für Kinderheilkunde, ix. 106.

<sup>2</sup> See also Brown-Séquard's observations on vaso-motor and other disturbances on the same side as the cerebral lesion, Archives de Physiologie, 1875, page 854.

<sup>3</sup> Pflüger's Archiv, xiii. 1.

through openings trephined in the skull. For a very circumscribed destruction of the cortex a single opening was sufficient. For a more extended operation several holes were made near each other, and the brain substance between them removed by a process of tunneling. By a series of operations of this sort, which, however, were by no means bloodless, Goltz succeeded, in one instance, in washing away all the convolutions of one of the cerebral lobes which could be reached by openings through the skull. The animal lived in this condition for several weeks, and was used for numerous observations.

As the result of his investigations, Goltz maintains that the extent, and not the locality, of the injury is of importance in determining the nature of the disturbance produced; *e. g.*, the effect of the operation is the same whether the brain substance is washed away in the anterior portion of the so-called "excitable zone" of Hitzig or far back in the posterior lobe. This want of agreement with the results obtained by other observers may perhaps be partly explained by the fact that in all Goltz's operations a comparatively large portion of the brain was destroyed; *e. g.*, where the jet of water was applied through a single opening in the skull, the diameter of the excavation thus produced was about 1.7 centimetres.

The author describes the results of unilateral destruction of the cortex cerebri as disturbances (1) of sensation, (2) of vision, (3) of motion, all on the opposite side.

I. *Sensation.* Immediately after an extensive destruction of the cortex the animal is often completely anæsthetic on the opposite side. Pinching and pricking of the limbs and face call forth no expression of pain. This condition is, however, transient. A few days after the operation painful impressions are felt all over the body, but less distinctly on the opposite side, as may be shown by observing the weights which are sufficient to produce annoyance when placed on the different paws. To this condition of impaired sensibility, which is found to be very persistent, the author attributes, in part at least, various awkward movements of the limbs on the side opposite to the injury. Thus a dog with an injury to the cortex on the left side, when placed upon a table, is apt to fall off whenever, in moving about, his right feet come near the edge, because, according to Goltz, his sensibility is so far impaired on that side that he does not perceive quickly enough that he is treading on nothing. Disturbances of vision and motion doubtless also contribute to this result.

II. *Vision.* Blindness on the opposite side results from an extensive destruction of the cerebral cortex. This is at first so complete that the animal in moving about strikes its head against obstacles on that side. Afterwards sight is so far recovered that obstacles are avoided, but there is a persistent defect of vision, in consequence of which objects

seen with that eye fail to call forth their usual emotions. Thus a dog with an extensive destruction of the cortex on the left side, and with the left eye extirpated, learns to move about without running against obstacles, but shows no fear of objects which before the operation had excited great terror, does not recognize a piece of meat held before his face, and is not frightened when held outside of a window, as is the case with an unimpaired dog. To explain these phenomena, Goltz makes the hypothesis that a dog thus operated on has very imperfect sensations of the position and color of objects whose images are thrown upon his retina; that everything appears gray and indistinct, as if surrounded by a mist. He therefore sees objects sufficiently well to avoid them in moving about, but gets very imperfect ideas of their nature. Another hypothesis, which seems quite as reasonable, would be that the retinal images produce their normal sensations, but that the power, acquired by experience, of interpreting these sensations has been lost in consequence of the injury.

III. *Motion.* Extensive destruction of the cerebral cortex causes at first a paralysis on the opposite side, so complete that the animal in attempting to stand falls upon that side. After a few days, control over the limbs is so far restored that the animal moves about in an apparently perfectly normal manner. A close examination, however, reveals a variety of motor disturbances which are very persistent in their character. In the first place, if the animal is moving on a very smooth floor the feet on the side opposite to the injury often slide out from under it. Even when lying quietly the animal often allows its legs on that side to assume, or be brought into, very awkward positions, without exhibiting any annoyance. These phenomena may depend to a great extent on the diminution of sensibility above described, but there are other motor disturbances which cannot be thus explained. For instance, a dog with an injury to the cortex on the left side does not use the right fore paw to reach and hold its food, nor to scratch away the earth for the purpose of burying a bone. If trained to give the fore paw at command, a dog thus operated on gives invariably the left paw, and if by long persuasion and reiterated commands the animal is finally taught to give the right paw, a further destruction of the cortex on the same side as before produces the former helpless condition. In other words, it is the power to use the paw, not as a locomotive organ, but as a *hand*, which is affected by the injury.

It will thus be seen that the effects of destruction of the cortex are of two sorts, namely, transient and persistent. It is the latter only which, according to Goltz, are to be regarded as indicating the functions of the part destroyed, and which he calls therefore "phenomena of deficiency" (*Ausfallerscheinungen*). They may perhaps be best described collectively as a failure on the part of the animal to make an intelligent use

of its sensations, and its power of motion. The former, *i. e.*, the complete loss of motion, sensation, and vision, he regards as due to an inhibitory process, starting from the wound in the brain and acting upon deeper-seated centres. The phenomenon is therefore similar to the temporary absence of all reflex movements in an animal whose cervical cord has been divided. If this theory is correct, it is necessary to suppose that the mechanical irritation due to the removal of a portion of the cortex acts not only in a very different way, but over a very different extent of brain substance from an electrical irritation applied to the same spot. From this point of view Goltz regards the immediate results of local destruction of the cortex as observed by Hitzig<sup>1</sup> as inhibitory phenomena, and dissents from Hitzig's conclusion that the disappearance of the disturbances produced by the injury indicates that some other portion of the cortex has assumed the function of the part destroyed. As conclusive against Hitzig's view he instances his own experiment in which a dog with the *whole surface* of a cerebral lobe washed away moved his limbs, head, tongue, eyes, eyelids, ears, jaws, and tail in a perfectly normal way.

Eulenberg and Landois, whose observations were alluded to in the first half of this report, found that cauterization of Hitzig's centres for the movements of the limbs caused a rise of temperature in those parts amounting to from 5° to 7° C., and lasting two or three days. Their statements have recently been confirmed by Hitzig.<sup>2</sup> It is difficult to reconcile these observations with those of Lépine (on the rise of temperature in the limbs caused by irritating the cortex), except on the supposition that the phenomenon depends upon the irritation and not upon the destruction of the parts, as the authors suppose. This view is not inconsistent with the authors' observation<sup>3</sup> that feeble electrical irritation of the cortex caused a diminution of temperature in the limbs; for in the first place this cooling was very slight in amount (0.2° to 0.6° C.) and was not a very constant phenomenon, and in the second place there is reason to believe that irritation of the cortex by the actual cautery has a very different effect from that produced by electricity.<sup>4</sup> By an extension of Goltz's theory it might fairly be assumed that destruction of a portion of the cortex causes a temporary inhibition of vaso-motor centres as well as of those of locomotion, vision, etc. This view is quite in accordance with Brown-Séquard's<sup>5</sup> recent observation that all the effects of section of the cervical sympathetic may be produced by cauterization or "thermic irritation" of the cortex. In this case, however, the results were produced on the *same* side as the operation.

<sup>1</sup> Reichert and Du Bois Reymond's Archiv, 1874, page 392.

<sup>2</sup> Centralblatt für die medicinischen Wissenschaften, 1876, page 323.

<sup>3</sup> Centralblatt für die medicinischen Wissenschaften, 1876, page 262.

<sup>4</sup> See Brown-Séquard, *loc. citato*.

<sup>5</sup> *Loco citato*, page 864.

REPORT FOR HAMPDEN DISTRICT.<sup>1</sup>

G. S. STEBBINS, M. D., REPORTER.

THE year commencing June 1, 1875, and ending at the present time, has not been remarkable for the prevalence (within the district embraced in this report) of any very alarming or unusually fatal epidemic, such as now and then establishes an important epoch in the history of disease in given localities. Diseases of a non-malignant and a comparatively non-fatal type have, however, prevailed at intervals, and to a very general extent, and among them may be mentioned rheumatism in all of its varied forms, and epidemic influenza, with its oft attendant train of pulmonary diseases, bronchitis, pneumonia, pleurisy, and pleuro-pneumonia. The prevalent form of influenza has been somewhat severe, and the atmospheric conditions giving rise to it have greatly conduced to the acuteness of the rheumatic affections. Pneumonia has partaken of the general severity of inflammatory disorders, and a considerable fatality has attended its prevalence. Phthisis, both tubercular and inflammatory, the ever-present scourge of New England, has, as usual, numbered among its victims its average quota of all ages, and from every rank of society.

Diphtheria in its general prevalence has assumed more of the character of an epidemic than any other disease, and owing to its frequency and unusual virulence it has attracted and demanded the closest attention, the most thorough observation, and the most patient investigation of the profession. To us, as to the profession in general, the origin of this malady is still shrouded in mystery. It appears to be governed by no general law of onset or progress. Unlike cholera, yellow fever, and small-pox, which thrive best and rage most along the track and amid the vapors of oceans and rivers, in the miasm and noxious exhalations of crowded settlements, selecting the ill-fed and ill-clad as their chosen victims, diphtheria breaks out all at once in isolated, inland towns of the loftiest and driest situation, which nature drains to perfection and apparently supplies with the purest atmosphere, and whose population is as sparse as it is well fed, clothed, and provided with the comforts of life. It often selects as its first and favorite subjects those of apparently the most perfect health and vigorous constitutions. In its visitations it has passed by populated marshes, and dirty, crowded streets; while it has carried dismay and destruction throughout the avenues and fashionable abodes of the higher classes.

Among the questions which have been raised and discussed here as elsewhere without satisfactory solutions are these: Is diphtheria a poison of the blood *per se*, with a local manifestation of the same in the throat, or is it a local disease, the poison emanating from without, and the blood poisoning being secondary? Is it a disease of locality, dependent upon local causes, engendered by improper sanitary regulations and disregard of hygienic laws? Is it a disease dependent, wherever prevailing, upon a general miasmatic influence, aggravated by local causes? Is it a disease altogether unlike membranous croup, or is there any relationship existing between the two?

As regards the first question, whether it is primarily a blood disease or

<sup>1</sup> Read before the Massachusetts Medical Society, June 13, 1876.



local in its origin, there have been and still are supporters of both hypotheses. If constitutional, why so many precautions against disturbing the local patches, lest by irritating the parts and detaching the false membranes we expose surfaces and establish a nidus for absorption of the virus? If the blood is already surcharged with poison, why fear absorption? If the disease be local in origin, why deprecate all local treatment, and resort almost exclusively to constitutional means of relief and cure? Whatever may be the source of the poison, the evidence proves that the ultimate result is a poisoning of the blood, and that, too, of the most virulent kind, overpowering the nervous system, often arresting its functions, and producing rapid, fatal exhaustion.

Touching the second question, namely, Is it a disease of locality or is it a disease dependent upon some general miasmatic influence aggravated by local causes? I would ask, If a disease of locality, why is it that diphtheria so often prevails in apparently the healthiest situations, while it gives immunity to places where one would naturally expect the disease to appear first and rage the worst?

While there is much evidence to show that it is a disease of locality, propagated by infection, not to say contagion, is there not much of the natural history of diphtheria which cannot be satisfactorily accounted for upon this theory? We know that certain chemical changes and conditions of the atmosphere give rise to irritative diseases of the respiratory passages, independent of any and every local cause. For instance, we may mention the epidemic influenza which a few years ago prevailed almost simultaneously over a large portion of the country, those in a certain city affected by it numbering tens of thousands. The epizootic, which three or four years ago disabled nearly all the horses from Maine to Florida, and from Boston to the Black Hills, cannot be said to have been due to local causes, but was attributed to certain atmospheric changes or conditions. Here the question is raised, Do we sufficiently study atmospheric changes and their relative effects in producing or aggravating diseases of this class? May not and does not some chemical change occur in the atmosphere, by which the natural proportion of its component parts is so altered that it becomes itself the irritating source of the disease by its direct action upon the throat and respiratory organs, or produces the blood poisoning by arresting normal function, preventing elimination of effete material from the system?

Regarding the question, Is there any relation between membranous croup and diphtheria, or are they distinct diseases? it is one admitting of more than a passing doubt, and of careful discussion.

I am compelled to believe that many more cases have been recorded in the physicians' case-books during the prevalence of diphtheria in the Hampden district than have actually occurred. I regret to say that it has been evident that some physicians among us have, to a greater or less degree, magnified the frequency of its occurrence by calling almost every case of sore throat diphtheria, and gaining notoriety in the successful treatment thereof. But setting aside all exaggerations, the disease has seldom if ever prevailed to so general an extent as during the past year.

Typhoid fever has prevailed to a considerable extent, though not to the degree that it has in former years.

Diseases of a malarial type, remittent, intermittent, and congestive fevers, have been frequently observed, and are apparently on the increase in this section of the Connecticut Valley. Diseases of the nervous centres and the general nervous system have been very common, and there appears to be a growing tendency to the development of this class of disorders. Diseases which are ever the special hazard of childhood and infancy—measles, scarlet fever, spasmodic and membranous croup, cholera infantum, whooping-cough, and parotitis, have, during their favorite seasons, been more or less prevalent, though generally of a mild type, and but a small rate of mortality has attended them.

Thus far having dealt in generalities, I will presume upon your good nature and patience by reporting a few special cases of more than ordinary interest to us who live and take our observations on the outer borders of the commonwealth.

CASE I. is that of the birth of a child occurring in the practice of Dr. A. R. Rice, of Springfield, July 8, 1875. The weight of the child, at birth and unclothed, was twenty pounds and two ounces; sex male, well developed, of symmetrical proportions; measurements taken at birth by the attending physician were as follows: occipito-frontal, sixteen inches; occipito-mental, measuring from angle of the jaw, sixteen and three fourths inches; length of child, twenty-eight and three fourths inches; girth of chest under the arms, twenty and one half inches; breadth of shoulders, ten and one half inches. The infant seemed unusually strong and active in its movements. He was of Irish parentage, the mother a primipara, weight one hundred and thirty pounds, height five feet four inches, age twenty-three. She was in labor twenty-four hours, though in active, progressive labor only about six hours. Presentation was natural; liquor amnii escaped about four hours previous to birth; caput succedaneum was very prominent; shoulders were not born for an hour after the head, and had to be forcibly extracted, as did the hips, both of which firmly engaged in the pelvis. There was no rupture of the perinæum. The mother made a good and rapid recovery, and the child still continues to thrive. There is nothing about the physique of the father that is remarkable. He is of middle age, of perhaps more than ordinary size, and of vigorous constitution.

CASE II. is also an obstetrical one, happening in the practice of Dr. Calkins, and attended by him at the Home for the Friendless. The mother in this as in the former case was a primipara. Labor was slow and protracted. Vertex presented, and after several unsuccessful attempts at delivery with the forceps, a more thorough investigation revealed the fact that the head was hydrocephalic, with a large accumulation of water between the scalp and the cranium. After puncturing and drawing off about two quarts of water, forceps were reapplied and delivery accomplished. The peculiarities of fetal formation were as follows: eyes greatly protuberant, and situated at the extreme upper border of the forehead; double hare-lip; cleft palate; fingers and hands greatly deformed; spontaneous amputation of the left foot, the stump being almost a perfect fac-simile of that following a Pirogoff's amputation.

CASE III. was one which occurred in the practice of the contributor of this report. I was called to my patient after she had been having, as she said, reg-

ular labor pains for two hours or more, it then being eight o'clock A. M. Upon digital examination I found that the os uteri had not dilated in the least, and I gave her an opiate, telling her husband to call me whenever circumstances indicated the need of my services. At eleven A. M. I was summoned, and found her in frequent, violent pains, but, as before, no dilatation, and no expulsive force communicated to my finger, which I forced within the os. Placing my hand upon the fundus I found it forcibly contracting, and the whole force of the uterine pains was spent and lost there. At about four P. M. the os was dilated to the size of a silver half-dollar, and still there was no contraction upon the fingers introduced within the mouth of the uterus and retained during a violent pain, nor was any expulsive force apparent there. The presentation proved to be breech, the head hydrocephalic, being a mere bladder of water, the cranial bones being widely separated, and, as it were, floating upon its surface; and in addition there was spina bifida, with a double tumor of considerable size. This condition of the head, as you will at once observe, explained the mystery concerning the non-expulsive and non-dilating effects of the pains, for the fundus contracting upon the bladder of water flattened it out with so little resistance that it could not aid in the expulsion of the breech. Delivery was finally accomplished with instruments, and under direction of a veteran friend in the service.

CASE IV. was a patient of the writer who had a stricture of the urethra in its entire length. He was forty-five years of age, and, accepting his own statement, had not voided his urine in a stream for seventeen years. For several years he had been in the habit as well as under the imperative necessity of passing a small iron wire, curved so as to adapt itself to the altered curve of the urethra (the wire being about twice the size of an ordinary knitting needle), and after it had remained for about fifteen or twenty minutes he could, on its withdrawal, void his urine guttatim. I saw him labor fully half an hour to introduce his wire, having to use a painful degree of force to work it through the stricture, which was apparently pretty uniform throughout the whole urethra. This condition of things was doubtless largely due to the long-continued rough treatment at his unskillful hands, though the primary cause was gonorrhœal inflammation. The patient had, in various places, undergone almost every variety of treatment except urethrotomy, and he had received but little encouragement from surgeons in this direction. An urethrotome was made of the exact size and curve of his wire sound, and after he had dilated his urethra as well as he could, I introduced my instrument into the bladder, withdrew just outside the sphincter, adjusted the blade, and divided the stricture the entire length of the urethra. I then introduced a larger and straight urethrotome, divided the opposite urethral surface in like manner, after which I introduced a large-sized catheter. According to directions, he continued to pass a catheter whenever he desired to void his urine, and he also passed the largest-sized sound two or three times daily, stretching the passage for half an hour each time. He followed up this treatment for several weeks, with no recurrence of the trouble.

CASE V. is a case of lithotripsy in the practice of Dr. David P. Smith, of Springfield, which is of unusual interest, owing to the size of the stone crushed

and the well-marked diminution of the resulting cystitis after each operation of crushing. The patient was one of the resident clergymen, of middle life and vigorous constitution. He had been inconvenienced by the presence of the stone for several years. It was with no ordinary difficulty that so large a stone was handled and successfully crushed by seven successive operations, covering a period of about three months. Severe cystitis followed the first operations, and, as before stated, there was a marked abatement of the same following every crushing. An important lesson taught by this case is that much larger stones can be crushed with safety and success than has generally been supposed. The stone was phosphatic, and the saved fragments weighed an ounce and a half. The bladder regained its normal condition and function.

CASE VI. is a case of vesico-vaginal fistula, also a patient of Dr. Smith's, the opening in the bladder being situated near the entrance of the urethra and of sufficient size to allow of an abundant flow of urine. The first operation was performed at the patient's residence in an adjoining town, and the two later ones at the doctor's office in this city. The opening is now so nearly closed as to admit of but a slight dribbling of urine. The point of interest in the case is that the last operations were at the doctor's office, the patient being allowed to walk about as usual, with sutures in situ, instead of being confined to the bed or house, as is more generally the case, thereby saving time and expense to those unable to pay a physician for attendance at a distance.

CASE VII., occurring in the practice of Dr. P. LeB. Stickney, of Springfield, was that of a young man aged twenty years, who had been a stout, healthy person from early infancy; employment roofing, in which he was accustomed to hoist loads of gravel and cement to the tops of buildings. On the 14th of January, 1876, the doctor was first called. The patient was then complaining of loss of strength, with diarrhoea, and loss of appetite, and had been ill for two months previously. The most prominent symptom aside from the great debility and diarrhoea, was pain of a dull, moderate character in the left side and lower border of the chest. On examination the action of the heart was found to be stronger than normal, especially its impulse, but no enlargement of the organ was apparent. There were no valvular murmurs or other abnormal sounds. The upper portion of the left lung gave on percussion a clear, resonant sound; auscultation revealed slightly imperfect and indistinct respiratory sounds. Lower portion of the lung quite dull on percussion, and by auscultation no clear respiratory sound could be distinguished, yet there was no cough nor dyspnoea. Pulse normal and 75 per minute; temperature normal. Under the use of tonics and mild astringents, diarrhoea was relieved, appetite restored, and strength improved. There was some pain in chest, which was relieved by belladonna plaster. Patient continued to improve in general health, pain in chest ceased, but dullness of lung increased; action of heart became more violent; pulse on the 10th of February 110; temperature 99°; still there was no cough or dyspnoea. Found some inconvenience in lying on right side. Treatment for three weeks previous, alteratives, diuretics, and tonics, with blister to sides. It was now evident that effusion had taken place.

February 19th. Dullness on percussion increasing, the chest evidently filling up; no respiratory murmur heard except at apex of lung. On the 21st

effusion seemed rapidly to increase, apparently filling the whole left cavity. On the 22d the intercostal spaces were found puffed out. As yet there was no cough, no dyspnoea; pulse 112; temperature normal; heart pushed over to the right side, the apex felt distinctly pulsating on right side of sternum. Patient tapped between eighth and ninth ribs, using aspirator; thirteen pints of a greenish-colored serous fluid were drawn off. Microscope revealed some granular matter, but no well-defined pus globules. Some pain followed the operation; heart returned to its normal position; pulse fell to 90; the dullness continued, no respiratory sound discernible, no evident expansion of lung.

On the 22d of March patient was again tapped, nine pints of a similar fluid being drawn off, though of a pinkish color. Pulse gradually diminished to 84, where it remained. Still no dyspnoea; general health good; patient able to go out.

On April 1st was attacked with intense neuralgic pains, involving more especially the facial nerve of the right side. On the 23d of April was tapped again, and eleven pints of a darker and bloody-looking fluid escaped; neuralgia disappeared; appetite improved; pulse 85; temperature normal; no dyspnoea; impulse of heart stronger.

May 15th. Appetite poor; strength less; pulse feeble, and 95 per minute; bulging of chest at point of puncture; tenderness on pressure; dullness on percussion; no respiratory sound to be heard. Preparations made to tap again May 13th, but on the morning of this day the first cicatrix opened of itself by ulceration, and, as nearly as could be ascertained, about eight pints of fluid were discharged, the first portion bloody and rather thin, the latter mixed with pus.

May 15th. Pus has escaped freely, and on arising from bed and removing poultice at least four pints of pus were discharged. At this date pulse is 85, appetite improved, no cough, no dyspnoea, strength improving. During the twelve weeks' illness of this patient forty-five pints of fluid have been drawn from his left side.

CASE VIII. is one still under the care of Dr. W. G. Breck, of Springfield; patient a man forty-five years of age, who fell, on the 23d of October last, a distance of twenty-seven feet, striking squarely on his back, dislocating, according to the doctor's diagnosis, the third dorsal vertebra.

Since the date of injury there has been paralysis of the body below that point, with involuntary discharges from bladder and rectum. The flesh has sloughed from both heels, and there has been sloughing of the nates so as to expose the sacrum and coccyx, which are now covered by healthy granulation. Patient has an excellent appetite, is in good flesh, and is in quite good health and spirits. Complains of severe piercing pains at seat of injury, with a sense of painful constriction of the body. There are at times violent involuntary movements of the lower extremities, and his sexual organs respond to excitants to the extent of complete erection. The most remarkable thing about his case is the degree of health and strength he now enjoys, considering the length of time elapsed since the injury, the extent of paralysis, amount of sloughing, and drain upon the constitution.

CASE IX. is one possessing an important moral and a certain practical lesson; therefore I report it not in order to show the progress which the science of medicine has made in this district, but rather to illustrate its peculiar phases. Dr. Stickney had been applied to several times by the same lady, during a period of five or six months, for relief from suppressed menstruation. Its arrest, the patient declared, was due to a cold bath which she indulged in just at the advent of a period, and she could not possibly assign any other reason. Cathartics, emmenagogues, etc., did no good. Not having seen or heard anything of his patient for nearly two months, the doctor had given her up, not expecting to hear from her again. Being summoned suddenly one night not long since to see her, he learned upon inquiry that she had been under the care of a surgeon who diagnosticated her disease to be a tumor requiring tapping as the only means of relief and cure. He had already tapped twice, the first time drawing off a quart of water, the second time a pint, and had engaged to tap the third time on the day after Dr. Stickney was called. Dr. Stickney soon found the lady who had been so long suffering from suppression of menses to be in labor, and when he, in answer to the interested and anxious inquiries of surrounding friends, announced his diagnosis, both patient and friends denied in concert the possibility of such a dilemma, and hastened to denounce the doctor's opinion and judgment at the same time. A living child was soon born, though the patient still persisted that the whole cause of the tumor was a mystery to her.

The practical lesson is that a common trocar may be plunged into the uterus, the liquor amni drawn off repeatedly, and no harm result save that of giving rise to premature delivery. I do not report this case as one altogether without precedent, or with the expectation that any one will attempt to repeat the experiment, but to show with what impunity even the uterus may be tapped.

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## THE SURGICAL HISTORY OF THE WAR.

EVEN the great reputation gained by the now celebrated Circular No. 6, which was issued from the medical department of the government shortly after the close of the late war, has hardly prepared us for the almost gigantic task which has been undertaken by the Surgeon-General and his energetic associates of the Army Medical Museum. Although more than ten years have elapsed since the commencement of this undertaking, it is hardly a matter of surprise that the volume which has lately made its appearance completes but the first half of the whole work.

Considering the limited supply of clerical force which at times has been at the disposal of the department, and the uncertainty of government action in regard to the necessary appropriations, we may congratulate those who have had the work in charge, as well as the profession at large, upon the favorable prospects of its completion.

The volume lately issued is the surgical volume of the second part of the work. In the first surgical volume, in addition to a chronological summary of losses in battles and engagements, an exposition of the statistics and de-

tailed reports of special wounds and injuries of the several regions was begun, it being found preferable to adopt this method of arrangement. Nearly fifty thousand cases are here placed on record. The second surgical volume continues the account of special wounds and injuries, containing those of the lower portion of the trunk and upper extremities, which are illustrated from the records of nearly two hundred thousand cases. As a sample of the scale and character of the material here collected we would point to one item, namely, the records of thirty-seven hundred and twelve excisions. The volume which is yet to appear will begin with injuries of the lower extremities; a chapter will succeed on fracture and luxations from other causes than gunshot injury. Pyæmia, secondary hæmorrhage, gangrene, and tetanus will receive a proper share of attention, and the closing chapters will be devoted to anæsthetics, surgical apparatus, and the transportation of wounded. A mere enumeration of the subjects treated of fails to give any adequate idea of the amount of care which has been expended upon these volumes, of the faithful following up of the histories of cases long after the termination of the war, a work which the records of the pension bureau made possible, of the elaborate illustration by photographs and wood-cuts, and of the carefully compiled tables of statistics. Considering that no work of this character, of equal magnitude, has ever been undertaken, and that, with the exception of the Crimean, the history of the surgery of no other war has ever been attempted, we may congratulate the editors of this work on the success which has attended their treatment of so huge and complicated a task. We hesitate to criticise even small matters where there is so much to admire. We cannot help feeling, however, that the text would appear to greater advantage if left to its own unaided merits, without help from borrowed illustrations of anatomy or of well-known surgical instruments. This fault, and an attempt at a little too elaborate original illustration, seem to us the chief and almost the only drawbacks of the present volume. We cannot help thinking that so grand a work does not need any such adventitious aids. This is, however, an æsthetic rather than a practical drawback to the value of the book, which, with its companion volumes, must always stand as a monument of medical and surgical science which every American physician may point to with pride.

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#### INTERNATIONAL MEDICAL CONGRESS.

THE International Medical Congress will be formally opened at noon on Monday the fourth day of September. The sessions of the congress and of its sections will be held in the University of Pennsylvania, Locust and Thirty-fourth streets. The general meetings will be held daily, from ten to one o'clock. The sections will meet at two o'clock. Luncheon for members of the congress will be served daily in the university building from one to two o'clock.

On Wednesday evening, September 6th, Dr. J. J. Woodward, U. S. A., will address the congress on the Scientific Work of the Surgeon-General's Bureau.

The public dinner of the congress will be given on Thursday evening, September 7th, at seven o'clock.



The registration book will be open daily from Thursday, August 31st, to Saturday, September 2d, inclusive, from twelve to three p. m., in the hall of the College of Physicians, northeast corner of Thirteenth and Locust streets, and at the University of Pennsylvania on Monday, September 4th, from nine to twelve m., and daily thereafter from nine to ten a. m. Credentials must in every case be presented.

Letters addressed to the members of the congress, to the care of the College of Physicians, northeast corner Locust and Thirteenth streets, Philadelphia, during the week of meeting will be delivered at the University of Pennsylvania.

The secretaries of State and Territorial medical societies are requested to forward without delay to the chairman of the Committee on Credentials, I. Minis Hays, M. D., 1607 Locust Street, Philadelphia, lists of their duly accredited delegates to the congress. Delegates and visitors intending to attend the congress are earnestly requested individually to notify immediately the same committee. This information is desired to facilitate registration, and to insure proper accommodation for the congress.

Members intending to participate in the public (subscription) dinner of the congress will please notify the secretary of the Committee on Entertainment, J. Ewing Mears, M. D., 1429 Walnut Street, Philadelphia.

Gentlemen intending to make communications upon scientific subjects, or to participate in any of the debates, will please notify the commission before the 15th of August.

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#### MEDICAL NOTES.

— The Seashore Home for Children, formerly at Beverly Farms, has been moved to Plymouth, where the managers have secured the Clifford House and placed in charge one of the sisters from the Children's Hospital in Boston. Physicians desiring to send patients to the home may apply to Dr. Brown, 97 Waltham Street, or to Dr. Hastings, at the dispensary on Bennett Street. Dr. Edward T. Williams is the resident physician of the home.

— We have to record a death occurring during the administration of ether in the practice of Dr. A. D. Sinclair of this city. The patient, a young school teacher, had suffered for some time from dysmenorrhœa, for which incisions of the os were advised. The operation was performed on Wednesday, July 19th, ether having been administered by Dr. Vogel. The patient was placed upon the left side with the left arm behind her, as in Sim's position for a vaginal examination. The first steps of the operation had scarcely been completed when, to use Dr. Sinclair's expression, the patient suddenly died; we shall hope to obtain a detailed account of the case at an early day. It is hardly necessary to add that the unjust suspicions of foul play which have been thrown around this case have not been borne out by the testimony thus far given at the inquest at the time of writing, and have had no weight in the minds of the professional brethren of Dr. Sinclair.

— We understand that the gentlemen of the medical faculty of the Uni-

versity of New York express surprise and indignation at the statements of our New York correspondent last week, which they say are not in accordance with the facts. We have received no communication from them, but shall be glad to publish in our next issue any statement which they may wish to make.

— Dr. Whittaker has retired from the editorship of the *Cincinnati Clinic*, and Drs. L. R. Longworth and J. G. Hyndman are to conduct the journal in the future. A new monthly journal has appeared in Columbus, Ohio, the *Ohio Medical Record*. The editors are J. W. Hamilton, M. D., and J. F. Baldwin, M. D. This journal is the old *Ohio Medical and Surgical Journal* revived. The first number of the *Archives of Clinical Surgery* has recently appeared in New York, edited by Dr. Birmingham.

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## MASSACHUSETTS GENERAL HOSPITAL.

MEDICAL CASES OF S. L. ABBOT, M. D.

[REPORTED BY M. HUTCHINSON.]

*Acute Rheumatism, with Valvular Lesions; Remarkable Character of Pulse; Salicylic Acid Treatment.* — Willie T. C., aged seventeen years, slight built, somewhat emaciated, and looking not more than thirteen years old, entered the hospital on April 18, 1876. Reported himself to have had three previous attacks of acute rheumatism in 1873, 1874, and 1875 respectively.

Since the attack in 1874 has had marked and constant dyspnoea. On the 13th of April, having been at work as cash-boy, and having enjoyed pretty good general health during the winter, without known cause was seized with cramps and pains all over. The pain was so excruciating that previous to entrance he was obliged to inhale ether frequently, and for several nights could sleep only while under its influence. During severest paroxysms "was drawn up in a bunch." Pain is very severe in præcordia, throughout lower extremities, in left wrist, back of neck, and vesical region. Appetite poor. Constipated. Pulse 90. Temperature, evening, 101.9°.

Physical examination revealed impulse of heart forcible, with apex-beat one half inch below nipple; at apex the first sound muffled and prolonged, the second obscure; over base systolic and diastolic murmur distinctly heard, the diastolic being the louder; souffle more distinct than at apex; systolic souffle very loud under clavicle, the diastolic not being heard.

Over the upper and inner surface of both thighs the shock of the heart's systole is very perceptible to the touch and the impulse distinctly audible. The same signs were detected down even to the small arteries of the ankles and feet, and slightly in the left wrist.

Sinapism to cardiac region, five minims of liquid Dover's powder *pro re natâ* during the night, and six grains of salicylic acid pill every hour, were prescribed.

On the 20th, having had the anodyne but twice during the night, and having slept well, the patient was generally free from pain, except occasional par-

oxysms in the upper parts of thighs; was looking quite comfortable, and had a temperature of 98°.

On the 21st the salicylic acid was given every other hour.

On the 23d the patient was looking quite comfortable, and was allowed to sit up. The acid was given every three hours.

On the 26th the patient was up and dressed, having had no salicylic acid for the last thirty-six hours on account of nausea. Tongue clean, moist, and anæmic.

On the 28th had a return of three sharp, spasmodic attacks of pain in the left breast.

R̄ Pil. acid. salicyl. gr. iii. every three hours.

On the 29th the patient reports himself as having had no pain since resumption of the acid.

From this time until the 5th of May the patient was up and about the ward, when there was a return of pain in both thighs, especially the right.

R̄ Pil. acid. salicyl. gr. iii. every other hour.

Promptly on the next morning the patient was free from pain, and in a few days was playing about the yard.

The patient was discharged, well, on May 19th.

[*Remarks.* — This case presented some very remarkable features. The pulse in the left wrist, while the patient was in bed, was very strongly dichrotic, but not at all so in the right. After the patient was able to sit up, that of the right wrist became slightly dichrotic also, but much less so than that of the left. This dichrotism cannot be accounted for on the theory of the rebound of the blood-current from the aortic valves against a weak artery, as the lesion of the aortic valves was such as to allow a very free regurgitation into the left ventricle; the point of resistance from which the recoil took place, therefore, must have been the accumulating volume of blood in the ventricle. The dichrotism of the left pulse alone, while the patient was in a recumbent position, is explainable by the greater directness of the arterial current in the left than in the right arm; and the appearance of this symptom in a moderate degree on the right side, while the patient was sitting up, by the increased action of the heart in the erect, over that in the recumbent position.

The slackening of the aorta and its branches, owing to the great regurgitation through the aortic orifice, gives an explanation for another very peculiar symptom, the "visible" and audible pulse throughout the arteries of the extremities. The shock of the heart's contraction could be plainly felt by placing the hand on any part of the lower extremities, and over the arteries it was like the impulse communicated by a powerful machine. The expansion of the slack arteries under the excited action of a hypertrophied heart was such that the elasticity of the vessels could not come into play quick enough to ease off the shock which was transmitted as a sharp blow to the surrounding tissues. As has been stated, the throb of the arteries could be plainly seen down to the smallest arteries of the feet, constituting the "visible" pulse of Stokes.

Perhaps the most remarkable feature of all was the audible character of the pulse. The pulse could be heard as well as felt throughout the lower extrem-

ities, sounding like the stroke of a hammer everywhere, even in the soles of the feet; and at this distant point giving a double sound corresponding to the dichrotism of the pulse. These symptoms gradually diminished with the diminution of the heart's action during convalescence, but could be detected to some extent when the patient was discharged.

The action of salicylic acid in this case was most prompt and complete, giving almost immediate relief in a case of extreme severity. In less than a week from the beginning of treatment the patient was up and dressed, and was not obliged to return again to his bed during the day. — S. L. A.]

*Acute Rheumatism; Treatment by Salicylic Acid; Prompt Relief.* — Mary W., aged thirty-three years, washerwoman, entered the hospital May 8th. Has had several previous attacks of rheumatism, which came at intervals of about two years and had a duration of from four to eight weeks. Eight days previous to entrance, after exposure in hanging out a washing, she felt very cold and had chilly sensations, soon followed by pain in the back and in the thumbs. On the next day the pain had extended into the feet and the ankles, and also into the knees. On the day of entrance the patient could move only the neck and the ring and little fingers of the left hand without pain. Had slight dyspnoea and considerable pain in the chest. Evening temperature 101.6°.

R̄ Pil. acid. salicyl. gr. ix. every hour in two fluid ounces of milk.

The acid was given nearly every hour throughout the night. No sedative given. On the next morning reported herself as feeling quite comfortable, and "more easy than she expected to for a week." Little pain while at rest, but joints tender on pressure. Has occasional tinnitus, but no more than previous to entrance.

R̄ Pil. acid. salicyl. gr. vi. every hour.

Temperature, morning, 99.4°; evening, 99°. Nothing abnormal detected about the heart.

May 10th. Comfortable. Temperature, morning, 98.3°; evening, 98.6°.

May 11th. Pain slight only on motion. Bears pressure on the knees without pain.

May 12th. Given six grains of salicylic acid pill every two hours.

May 21st. Given six grains of salicylic acid pill after meals.

May 23d. A general return of rheumatic pains.

May 24th. Given nine grains of salicylic acid pill every two hours.

May 26th. Up and dressed, feeling "quite nicely," and almost entirely free from pain.

May 31st. Discharged, well.

[*Remarks.* — This case is given mainly as an illustration of the promptness of the efficient action of salicylic acid in many cases of acute rheumatism. The patient was an expert in rheumatism, having had seven previous attacks, and was therefore very competent to estimate its comparative efficacy as contrasted with that of the remedies employed on previous occasions. The prompt reduction of the temperature will also be noticed. — S. L. A.]

*Protracted Jaundice, with Severe Constitutional Symptoms, successfully Treated by Choleate of Soda.*—S. S., surveyor, forty-nine years of age, entered the hospital May 8, 1876. Had intermittent fever twelve years ago, while in the army. For several years has been troubled with "biliousness." For the past fourteen months has had a severe, steady pain, described as an ache, referred to a spot midway between the sternum and the navel, extending over a surface the size of a hand, from side to side, which is not specially tender to the touch. This pain has occurred at intervals of two or three weeks. Has been constant now for the past four days. Last fall was confined to bed for about three months with utter prostration and weakness. Since that has been up and about, but unable to work. For the past four or five months has had chills and fever at intervals of two or three weeks. For about three months has had severe and troublesome itching of the skin all over the body, and the skin is now covered everywhere by marks of scratching. Bowels regular until within two weeks. Has not noticed color of discharges. Has noticed that he had less control over the act of micturition during the paroxysms of pain, and that the urine was dark colored at such times. Appetite good except at time of pain. Occasional regurgitation of sour and bitter water. Pain not increased by food. No bad taste in mouth. Complexion very sallow. Conjunctivæ very yellow. Abdomen flaccid, resonant, not sensitive to pressure. No abnormal hardness detected anywhere. Pulse 90, full and strong.

Examination of urine: yellow color; acid reaction; specific gravity 1021; considerable sediment; coloring matter increased; urea, chlorides, and phosphates normal; albumen, a trace; bile pigment present; hyaline casts with yellow granules.

R̄ Acid. nitro-muriat. dil. ℥ xv. in sweetened water after meals.

May 10th. One dejection, said to be very light colored. Was kept awake by pain at epigastrium.

R̄ Fl. ext. taraxaci, i. morning and night.

May 11th. Much itching of skin. Warm bath at night.

R̄ Potass. bitart. ʒ i. to be combined with the fluid extract of taraxacum.

May 13th. Comfortable. Itching much less.

May 15th. Distress at epigastrium much less than on entrance.

May 16th. Sleep disturbed by pain in bowels. Free from pain now. Some nausea. Four loose evacuations, somewhat darker in color. Omit all medicine to-day.

R̄ Spts. ammoniæ aromat. ʒ ss, in an ounce of water, p. r. n.

May 17th. Nausea relieved. Comfortable to-day. Had chills at nine P. M., lasting two hours, and followed by fever of two hours' duration, with subsequent moderate sweating.

May 18th. Did not resume medicine on account of nausea. Slight return of itching.

May 19th. Frequent eructations of tasteless gas. Profuse night-sweats for two nights past. Omit the dilute nitro-muriatic acid.

R̄ Sodæ bicarb. ʒ ss, p. r. n.

R̄ Infusi salviæ at bedtime.

May 21st. Slept well. Slight sweating. Free from pain. Has not required soda. One dejection, darker than any yet.

May 25th. Profuse night-sweats. Some diarrhoea. Omit infusion of salvia. Omit taraxacum and potassium.

Ry Zinci oxidi gr. vi. at night.

May 27th. Suffers from pain extending from hepatic region to right iliac fossa. No evident increase of hepatic dullness or tenderness. One dejection, lighter color.

Ry Solut. morphiae 3i. p. r. n. every half hour till relief.

May 28th. Relieved by one dose of morphia. Omit it. No night-sweats since taking oxide of zinc. Omit it. Resume bitartrate of potassium and taraxacum.

May 29th. At two P. M. had a severe chill of two hours' duration, followed by fever for three hours. A second chill at daylight, which was checked by blankets and heater.

May 31st. Excessively weak. Severe chill this morning. Omit all medicine.

Ry Pil. quiniæ sulph. gr. vi. to be given to-morrow morning if chill returns to-night.

June 1st. Hepatic region not tender on pressure. No enlargement of liver detected. Somewhat sensitive on deep pressure at a point two and one half inches above the navel, beneath which no hardness can be detected, and gas is felt moving freely. Resume bitartrate of potassium and taraxacum.

Ry Potassi iodidi . . . . .	gr. i.
Tinct. gent. co. . . . .	3 ss.
Aque . . . . .	3 i.

Three times daily.

June 2d. Chill this morning, lasting three hours, followed by fever.

Ry Pil. quiniæ sulph. gr. x. to-night.

Omit all other medicine to-day.

June 3d. No chill to-day. Feels better. Perspires freely. Some deafness and sense of constriction in head to-day. Resume taraxacum and bitartrate of potassium, morning and night.

Ry Pil. quiniæ sulph. gr. vi. every night.

June 4th. Free from pain. No chill, but a slight amount of fever this morning.

Ry Pil. sodæ choleat. gr. v. morning and night.

June 7th. Slept well until four A. M., when he had a slight chill lasting two hours. Complains most of weakness. Increase the choleate of soda pill to ten grains.

June 8th. Slept well and feels stronger. One dejection of quite dark color. Omit quinine.

June 10th. One natural dejection.

June 12th. Omit bitartrate of potassium and taraxacum.

June 14th. Complexion now perceptibly lighter.

June 17th. Gaining rapidly in strength. Two dejections, very dark colored.

June 22d. Looking still lighter in complexion. Discharged, well.

[Remarks. — This patient has been heard from since he left the hospital, and his improvement continues. This was only moderate and fluctuating until he began the use of choleate of soda. Its use in this case was in some

sense empirical, being based upon its known power as a solvent of gall-stones. No gall-stones have ever been found or supposed to exist in the present case, but it was thought possible that an obstruction of the gall-ducts by inspissated bile, or some bile product, might be the cause of the jaundice and be removed by such a solvent, and it was accordingly tried. The patient improved in every way from the moment it was employed. The jaundice rapidly diminished, the stools resumed their natural color, the urine became clear, the distressing attacks of abdominal pain, the very exhausting chills and fever, and the excessive itching, all disappeared. At the last accounts the patient was gaining strength rapidly, and apparently was nearly well of a disabling affection which had lasted fifteen months. — S. L. A.]

COMPARATIVE MORTALITY-RATES FOR THE WEEK ENDING JULY 15, 1876.

	Estimated Population.	Total Mortality for the Week.	Annual Death-Rate per 1000 during Week.
New York . . . . .	1,060,000	1298	63.67
Philadelphia . . . . .	825,000	854	53.83
Brooklyn . . . . .	506,223	533	54.77
Chicago . . . . .	420,000	263	32.56
Boston . . . . .	375,000	194	26.63
Providence . . . . .	101,000	52	26.77
Worcester . . . . .	50,000	22	23.20
Lowell . . . . .	50,000	41	42.91
Cambridge . . . . .	48,000	16	17.33
Fall River . . . . .	45,000	33	38.15
Lawrence . . . . .	35,000	23	34.17
Lynn . . . . .	33,000	18	29.25
Springfield . . . . .	31,000		
Salem . . . . .	26,000	10	20.00

Normal Death-Rate, 17 per 1000.

BOOKS AND PAMPHLETS RECEIVED. — Illustrations of Clinical Surgery, consisting of Plates, Photographs, Wood-Cuts, Diagrams, etc. With Descriptive Letter-Press by Jonathan Hutchinson, F. R. C. S. Philadelphia: Lindsay and Blakiston. 1876.

A Practical Treatise on Diseases of the Eye. By Robert Brudenell Carter, F. R. C. S. With One Hundred and Twenty-Four Illustrations. Edited, with Additions and Test Types, by John Green, M. D. Philadelphia: Henry C. Lea. 1876.

A People without Consumption, and some Account of their Country, the Cumberland Table-Land. By E. M. Wight, M. D. Reprinted from the Transactions of the Medical Society of the State of Tennessee, April, 1876.

Some Disputed Points in Physiological Optics. By Henry Hartsborne. (Read before the American Philosophical Society, April 21, 1876.)

The Cause of Rotation in Lateral Curvature of the Spine. By A. B. Judson, A. M., M. D. (Reprinted from the Transactions of the New York Academy of Medicine.) 1876.

Report of Committee on State Board of Health, made to the Medical Society of Tennessee, April, 1876.

Archives of Clinical Surgery, a Monthly Periodical devoted to Surgery in all its Special Departments. Edited by Edward J. Birmingham, M. D. Vol. I. No. 1. New York: Routledge & Co.